

Introduction to ONOS Brigades & Update on ONOS/CORD WG Activities

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- Introduction to Brigade Model
- ONOS Brigades in 2017
 - Intent subsystem 2.0
 - SDN/ONOS training
 - gRPC northbound API
 - Build and package infrastructure
 - Security and performance analysis
 - P4
 - MANO/ONAP integration
 - Internationalization (i18n) / localization (l10n)
- ONOS/CORD WG Activities



Introduction to Brigade Model



- Motivation
 - ONOS community continues to grow
 - Challenges of how to coordinate a large group to make sure we're all working toward a shared goal
- Solution
 - Communicate clearly about ONOS vision
 - Invite people to work together on completing specific parts of the vision
- Brigade Model
 - Create small teams around specific features that core team want to ship in upcoming version of ONOS



- Benefits of Joining a Brigade
 - Opportunity
 - Unique opportunity to work with the core engineering team
 - Participate in work onsite at Menlo Park
 - Recognition
 - Showcased widely with the community both online as well as at events
 - Experience
 - Get experience in network engineering
 - A great stepping stone to possibly work at ON.Lab or other member organizations
 - Acceleration
 - Get work that you care about into an official ONOS release much more quickly
 - Funding
 - ON.Lab provides budget for teams to work with the core engineering team



ONOS Brigades in 2017



- Based on Networks Comprising of Regions with Different Technologies & Limitations
 - Different regions of network can use different means to satisfy an intent
 - Multiple intent domains within a single administrative domain
- Offers Composable Network-centric Primitives
 - E.g., Tunnel, default route, {broad | multi | any}cast
 - Efficient use of network resources via shared use of primitives
- Offers Apps to Negotiate/Select from Alternatives
 - Presently only one intent “solution” is implicitly selected
- Team
 - Leader: Brian O’Conner
 - Members: Fujitsu, ON.LAB



- Objective
 - Provide and re-organize open source teaching materials in different levels
 - Beginner, network engineer, developer
- Scope
 - Short term
 - Start with the designing of three training levels
 - Long term
 - Propose a DEMO server with testbed and DEMO accounts
 - Go in depth for the intermediate and advanced levels
 - Provide certification services and open source training materials
- Team
 - Leader: Abdulhalim
 - Members: DTU, Politecnico di Milano, UPMC, Universita di Pisa, Verizon, ONF, Strategic Virtualization, ON.LAB, NCTU, Politecnico di Torino, etc.





- Objective
 - Allow high-performance interactions with off-platform applications
 - A better replacement of REST
- Scope
 - Support gRPC as a NBI
 - Create handcrafted message types to provide access to system services
 - Enable gRPC for East/West communication
- Team
 - Leader: Aaron Kruglikov
 - Members:
 - **ON.LAB** (Jian Li, Aaron Kruglikov)
 - **ZTE** (ZhiYong Ke, Jian Tian)
 - **KISTI** (Asif Raza)



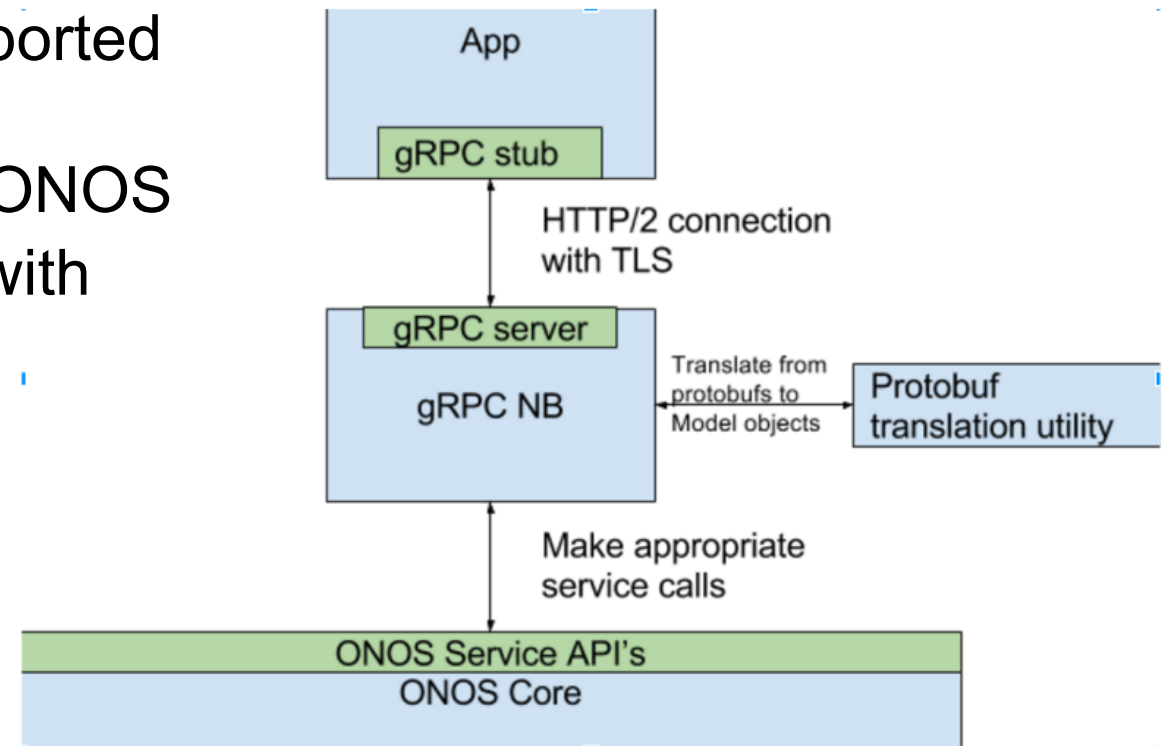
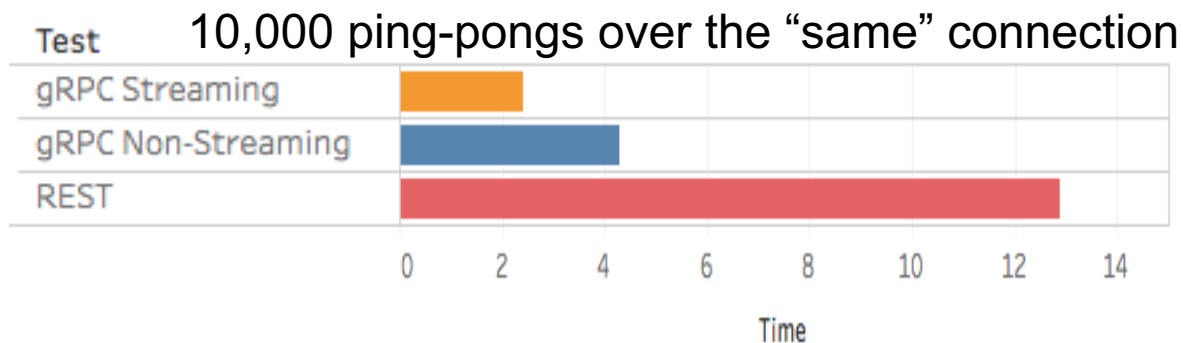


- Motivation

- Faster access than REST calls by using HTTP/2 connection multiplexing and bidirectional streaming

- Off-platform Application Support

- Ability to write apps in any gRPC supported languages
- Improved isolation of apps from core ONOS
- Remote access to service interfaces with granularity similar to Java APIs





- Approach
 - Protobuf models
 - Each class used in a service interface will have its own protobuf model
 - Any subclasses whose state is represented by non-primitive types
 - All enumerations will be collected separately
 - Provide better modularity and reusability
 - Translation utilities
 - One-to-one mapping to all protobuf models to enable reuse
 - Replace internal APIs? (huge changes, might happen in ONOS 2.0)
 - gRPC services
 - Simple service: one-to-one mapping (i.e., `getDeviceCount()`)
 - More complex service: a wrapper backed by two way streaming connection (i.e., `getDevices`)

Build and Package Infrastructure



- Objective
 - Tools and processes for building ONOS and publishing the artifacts
- Scope
 - Codebase can be built efficiently, reliably and consistently into a small artifacts
 - Deb, RPM, docker, snap, Ansible, Puppet, Juju Charm, etc.
 - Maintain developer SDN document
 - Integration of CI with basic functionality tests (STC) as part of build
 - Maintain and upstream Gerrit plugins (Module Owner, Stats, etc.)
 - Develop and maintain ONOS archetypes (MAVEN + BUCK)
 - Deprecate and remove legacy build framework
- Team
 - Leader: Viswa KSP
 - Members: Alexis Munyandekwe





- Objective
 - Assess controller robustness against network and system attacks
 - Assess controller performance in case of software and network failures
 - Identify countermeasures to cope with attacks and bugs against weak software elements
 - Compare ONOS controller to other equivalent controllers
- Team
 - Leader: Stefano Secci (UPMC)
 - Members:
 - **Orange Labs** (José Sanchez, Espinel David)
 - **Politecnico di Milano** (Giacomo Vertical)
 - **UPMC LIP6** (Kamel Attou, Chi Dung Phung, Stefano Secci)
 - **Nokia Bell Labs** (Dominique Verchere, Quan Pham Van)
 - **ON.Lab** (Jian Li, Andrea Campanella, Suchitra Vemuri)
 - **QUB** (Sandra Scott-Hayward)
 - **CIT** (Dylan Smyth)



- Tasks
 - A report on identified security & performance issues for each release
 - Run monthly e-meetings with presentations of experiment results
 - Run exploratory hackations and tutorials at workshops and conferences
- Activities
 - Brigade meetings
 - Kickoff meeting, 5, April, 2017
 - Brigade workshop, 26-29, May, 2017, Paris, France
 - Hackathon projects
 - ONOS hackathon project at RESCOM 2017, 19-23, June, 2017, Croisic, France
 - ONOS Build 2017, TBD, 2017, Seoul, Korea
 - ONOS hackathon project at NoF 2017, 22-24, Nov., 2017, London, UK
 - Tutorials
 - ONOS & CORD tutorial at NetSoft 2017, 3-7, July, 2017, Bologna, Italy



- Topics in Each Group

- UPMC LIP6

- Systematic identification of the bundles causing control-plane performance degradation upon their failure

- Nokia Bell Labs

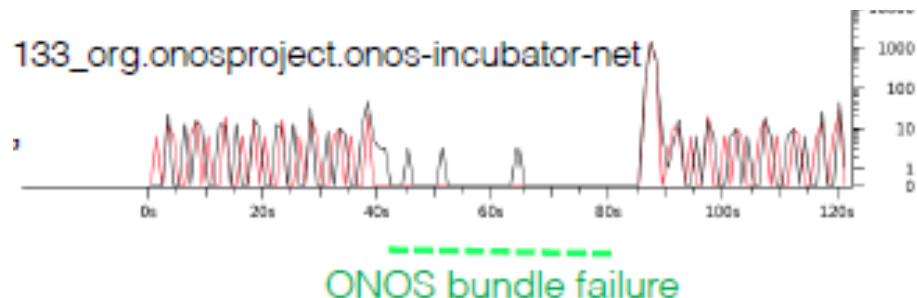
- Builds a secured, protected and trusted ONOS controller

- Politecnico di Milano

- Btest suite for Automated performance evaluation of SDN controllers (ODL, ONOS)

- ON.LAB

- ON.LAB QA team aligns with the brigade, provides relevant supports
 - Provides guidance on evaluating the performance of LISP SBI/NBI





- Topics in Each Group

- Orange Labs

Cross-layer root cause analysis, reputation of multi-domain SDN, cross-layer fault injection

- CIT

- Security of multi-controller SDN environments

- Inter-controller communications, synchronization, OpenFlow role-exchange

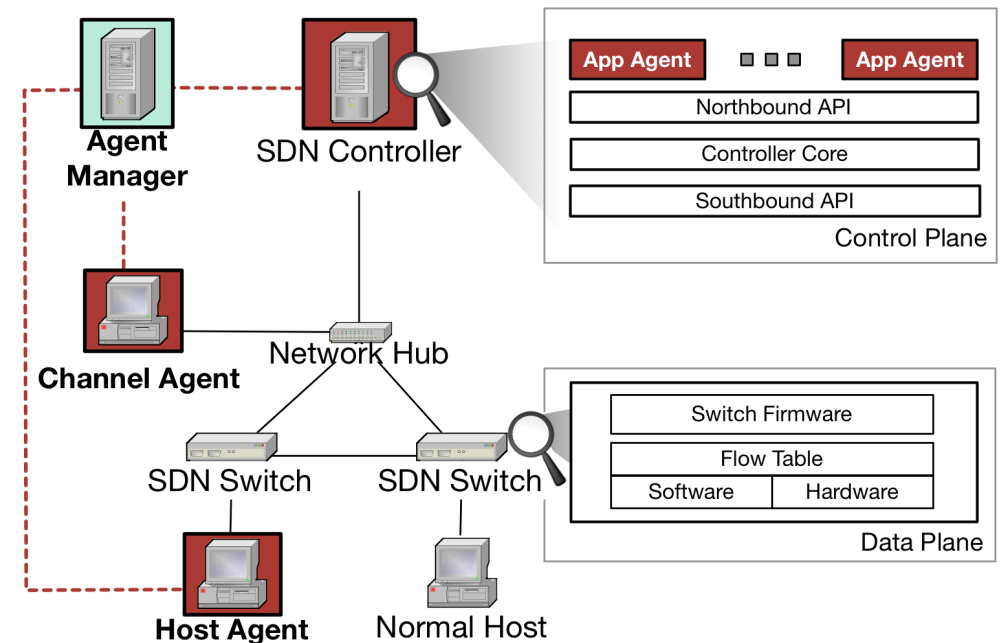
- QUB

- SDN controller security analysis

- Identify the security vulnerability by running ONOS against project DELTA

- DELTA

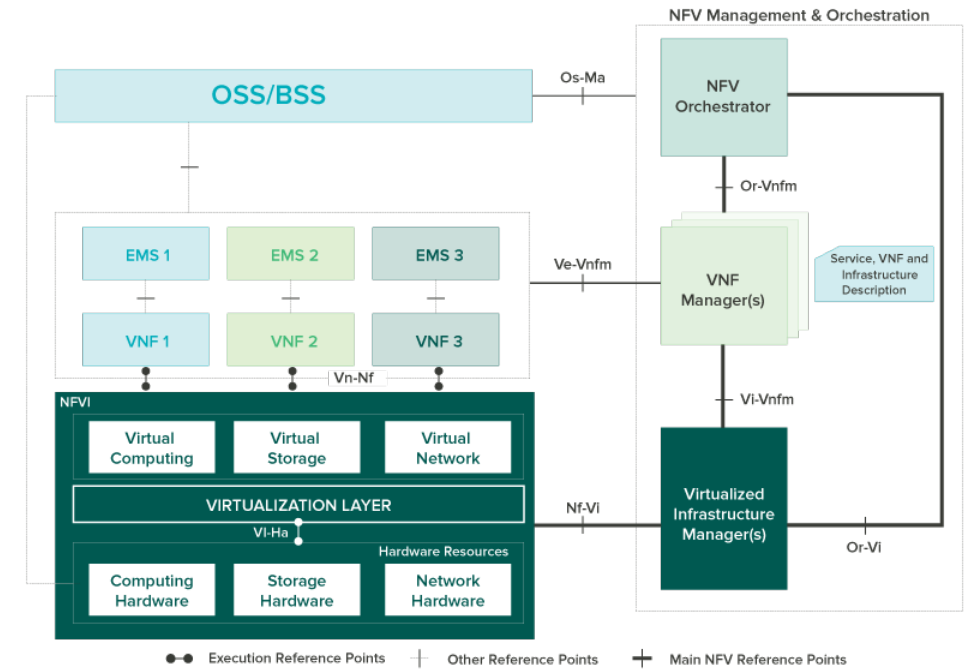
- SDN security evaluation framework
 - Hosted under ONF



Other Brigades



- Call for Proposal
 - P4
 - Support awareness of P4 programs including ability to deploy them
 - MANO/ONAP Integration
 - Integrations with orchestrator platforms
 - Internationalization (i18n)
 - Develop a framework for localization of the GUI and produce a set of localized message bundles
 - Localize ONOS documents



How to Get Involved in ONOS Brigades



- Procedures of Leading a New or Existing Brigade
 - Write a proposal send to David Boswell
 - Proposal will be reviewed and approved by the ONOS TST
 - Find more brigade members to form a team
 - Start to lead the brigade
- Procedures of Taking Part in a Brigade
 - Directly get in touch with either brigade leader or me (Jian)
- Contact Information
 - Jian Li: jian@onlab.us
 - David Boswell: david@onlab.us



ONOS/CORD WG Activities



- ONOS/CORD Working Group (WG)
 - Korean user and developer community for ONOS and CORD project
 - Initially launched at 5th, October, 2016
 - Members from 13 organizations
 - Cooperate with ONOS/CORD Ambassador program
 - <http://ambassadors.onlab.us/>



ONOS/CORD Working Group



- WG Committee Members

- 6 members from 4 organizations
- Most of committee members also work as ONOS/CORD Ambassador
- Plan regular meetup, activate ONOS/CORD Korea community

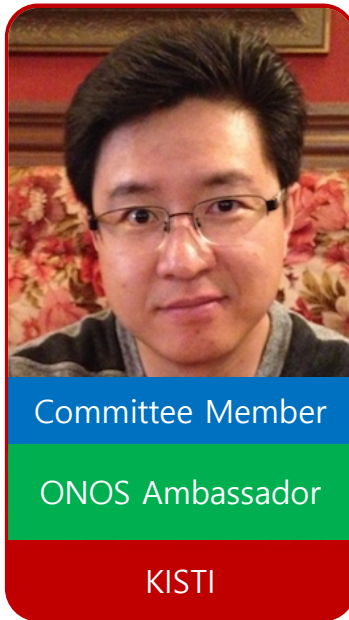


Chair of WG

ONOS Ambassador
Steering Team

POSTECH

Jian Li
(이 건)

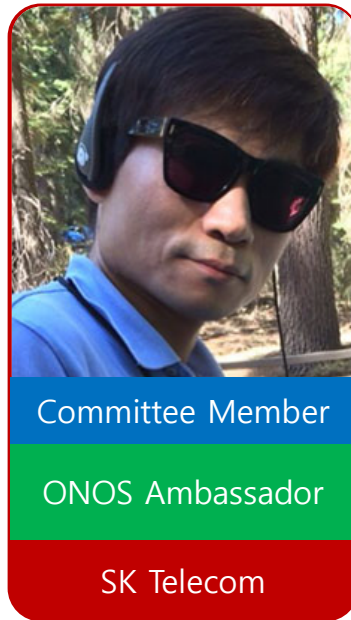


Committee Member

ONOS Ambassador

KISTI

DongKyun Kim
(김동균)

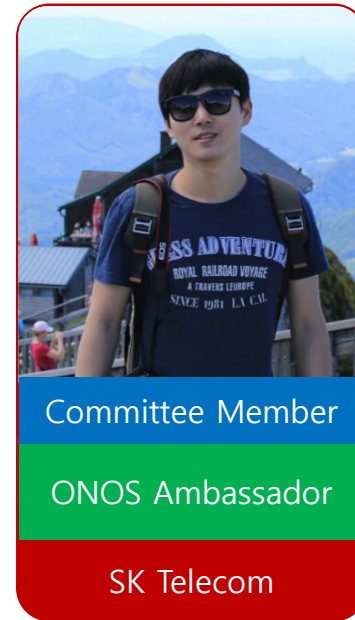


Committee Member

ONOS Ambassador

SK Telecom

Sangho Shin
(신상호)

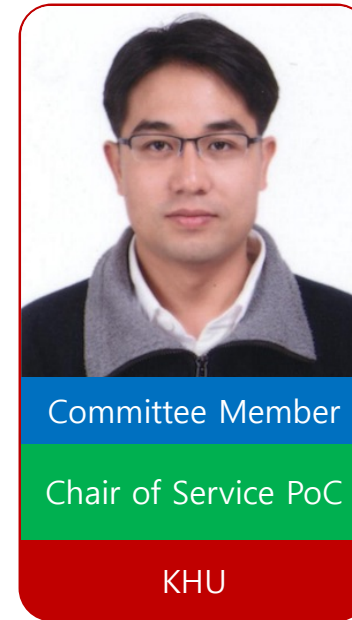


Committee Member

ONOS Ambassador

SK Telecom

Daniel Park
(박민철)



Committee Member

Chair of Service PoC

KHU

SungWon Lee
(이성원)



Committee Member

ONOS Ambassador

KHU

Sangyun Han
(한상윤)

ONOS/CORD Working Group



- Activities

- Bi-monthly meetup with WG members
- Past meetups
 - 25th, October, 2016, Seoul Office, ETRI
 - 16th, December, 2016, Samhwa Tower, SK Telecom
 - 17th, February, 2017, Seoul R&D Campus, Samsung





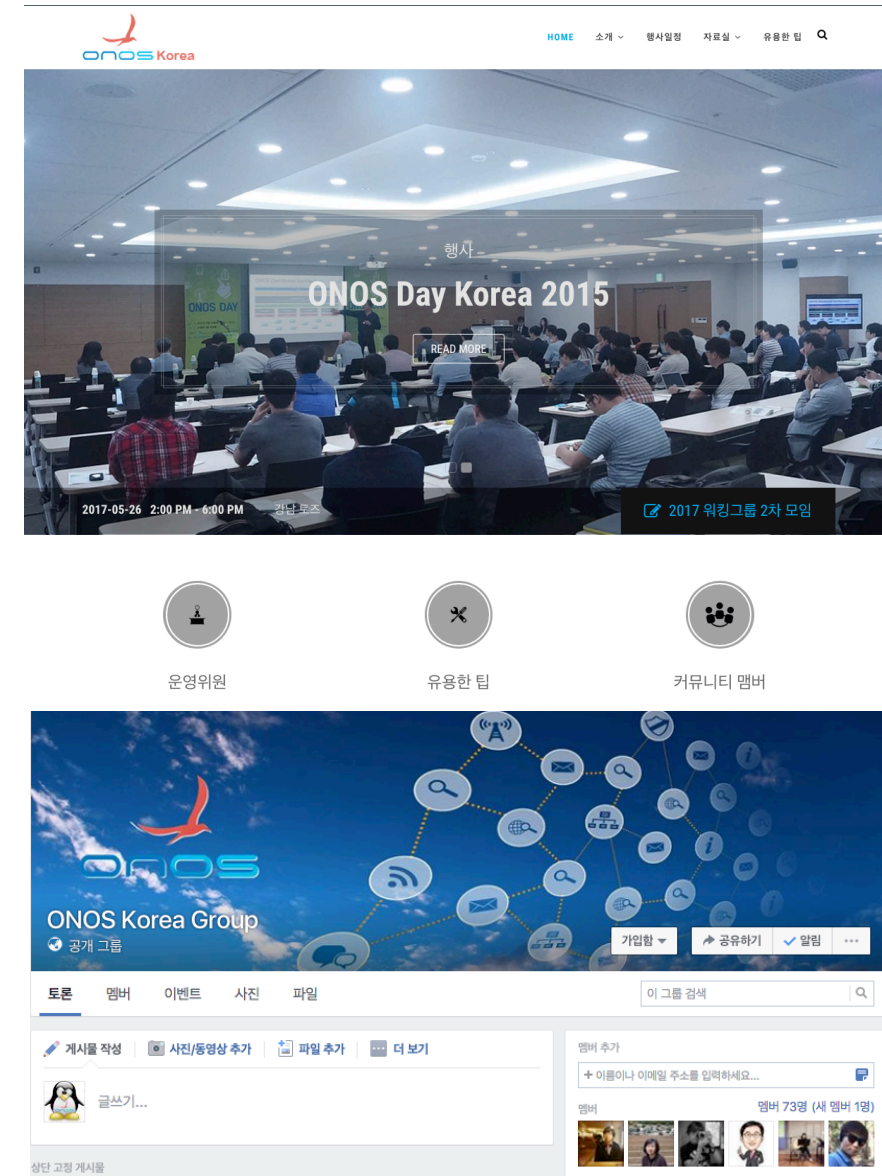
- Topics Covered So Far...

Category	Title	Affiliation
Community Updates	ONOS Build 2016 and ONOS Brigades Updates	POSTECH/ON.LAB
	Deployment Brigade Updates	KISTI
	Network Virtualization Brigade Updates	SK Telecom
Introduction	Introduction to CORD Project	KHU
	CORD Trellis vs COSMOS SONA	SK Telecom
	OpenWinCon Project Updates	KHU
	Introduction to ONOS New Features, How to Use BUCK to Build ONOS?	POSTECH/ON.LAB
Development	KREONET-S VDN Development Updates	KISTI
	Path Orchestration REST API using ONOS	KISTI
	ONOS, OpenWRT, Hostapd Integration	KHU
	Open Source Development Upstream	OpenStack Community
	An Orchestration Platform for Switch to Controller Placements	POSTECH
	Integrating OpenvSwitch Extension with SONA	SK Telecom
Deployment	Distributed ONOS-based KREONET-S Deployment	KISTI
	KREONET Testbed as a Service (Network Experiment Testbed)	KISTI

ONOS/CORD Working Group



- Homepage
 - <http://onos.kr>
 - Hosted on top of KREONET (by KISTI)
- SNS
 - Facebook
 - <https://www.facebook.com/groups/onos.kr/>
 - Slack
 - Registration: <https://onos-kr-checkin.herokuapp.com/>
 - Chat: <https://onoskr.slack.com/>
- Presentation Materials
 - GitHub
 - <https://github.com/onos-kr/working-group-seminar>



Upcoming Event



- 2017 2nd ONOS/CORD WG Meetup
 - 2PM – 6PM, 26th, May, 2017, GangNam Toz
 - Registration: <http://onoffmix.com/event/97326>

